



Cooperative Extension Service

Extension Grain Science and Industry
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GRAIN DUST EXPLOSION NUMBERS STEADY IN 1986

Twenty-one dust explosions were reported in the U.S. according to data compiled by Ralph Regan, FGIS Safety Director, and Robert W. Schoeff, Extension Marketing & Safety Specialist, Kansas State University. This compares to 22 in 1985 and a 10 year average of 21 explosions.

There were 2 fatalities and 14 injuries. Property damage was lowest in ten years with 13 falling in the minor category and only 1 of 21 falling in the severe category.

The principal location of the primary explosion was again the elevator leg, 9 of 21.

The cause of the primary explosion is still unknown in 6 cases. Welding, bearing failure and fires were other probable causes.

Corn was being handled when 7 of the 21 explosions occurred, sorghum in 5; wheat, 2; rice bran, 2; soybeans, barley and sunflower fines in one each and 2 facilities were not operating. Most of the explosions continue to occur in grain elevators - 11, 5 in feed mills, 2 in rice plants and one each in a flour mill, malt mill and alcohol plant.

There were dust explosions in 12 states; 5 in Kansas, 2 in Nebraska, Texas, Iowa, Arkansas and Kentucky and 1 in 6 other states.

It is hoped this data will be useful to all who are concerned about safety and preventing grain explosions. Appreciation is expressed to the many people who helped provide this information which is based on voluntary reports.

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February 25, 1987



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REPORTED GRAIN DUST EXPLOSIONS IN U.S. - 1986

<u>DATE</u>	<u>COMPANY AND ADDRESS</u>	<u>FACILITY</u>	<u>DAMAGE*</u>	<u>KILLED</u>	<u>INJURED</u>
Jan. 3	Snyder Elevator Elizabeth Town, IN	Elevator	Moderate	0	0
Jan 6	Ralston Purina Co. Wichita, KS	Elevator	Moderate	0	4
Jan. 10	Dudrey Feedlot St. John, KS	Feed Mill	Minor	0	0
Jan. 30	Ag-Land Inc. Brookfield, MO	Elevator	Minor	0	0
Feb. 19	Southeast Nebraska Coop. Co. Beatrice, NE	Elevator	Moderate	1	1
Feb. 25	Dudrey Feedlot St. John, KS	Feed Mill	Minor	0	1
April 11	Farmer's Coop Assn. Philip, SD	Feed Mill	Minor	0	0
June 11	Indiana Grain Louisville, KY	Elevator	Moderate	0	0
June 18	Anheuser Busch Co. Fairfield, CA	Malt Mill	Minor	0	4
July 28	Randall Co. Feed Yard Amarillo, TX	Feed Mill	Minor	1	1
August 5	Peavey Grain Co. Henderson, KY	Elevator	Moderate	0	0
August 25	Garvey Elevator, Inc. Wichita, KS	Terminal Elevator	Minor	0	0
August 28	Gooch Milling & Elevator Co. Lincoln, NE	Flour Mill	Minor	0	1

KSU, County Extension Councils and U.S. Department of Agriculture Cooperating.

All educational programs and materials available without discrimination on the basis of race, color, national origin, sex, or handicap.

Sept. 15	Circle "C" Associates Hutchinson, KS	Elevator	Minor	0	0
Oct. 8	Riceland Foods Jonesboro, AR	Rice Mill	Minor	0	0
Oct. 8	Yarmouth Feed & Grain Yarmouth, IA	Elevator	Minor	0	0
Oct. 29	Wake, Inc. Oskaloosa, IA	Feed Mill	Minor	0	1
Nov. 21	Riceland Stuttgart, AK	Rice Mill	Moderate	0	0
Nov. 28	Sunray Co-op Sunray, TX	Elevator	Minor	0	1
Dec. 15	ADM Peoria, IL	Alcohol Plant	Minor	0	0
Dec. 16	Harvest States Morris, MN	Elevator	Moderate	<u>0</u>	<u>0</u>
			Totals	2	14

*Minor - Less than \$50,000
Moderate - 50,000 - \$500,000
Severe - Over \$500,000

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February 25, 1987
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DUST EXPLOSION STATISTICS - U.S.

	<u>1990- 1956</u> ¹	<u>1958- 1975</u> ²	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>AVERAGE 10 YEARS 1977-1986</u>
NUMBER OF INCIDENTS	490	192	20	19	19	44	21	14	13	20	22	21	21
DEAD	381	68	65	8	2	10	13	6	-	9	4	2	12
INJURED	991	346	84	36	18	47	62	34	14	29	20	14	36
EST. OF DAMAGE TO FACILITY (\$MIL)	\$70.0	\$55.0	\$75.0	\$5.0	\$8.0	\$10.0	\$29.0	\$15.0	\$3.6	\$19.8	\$65.0	\$1.6	\$15.7
TYPE OF FACILITY													
GRAIN ELEVATOR			13	13	16	27	19	11	9	12	18	11	
FEED MILL			1	3	2	8	1	2	4	5	1	5	
FLOUR MILL			1	-	1	1	-	-	-	1	-	1	
OTHER:													
CORN PROCESSOR			3	2	-	2	-	-	-	1	2	-	
BREWERY			-	-	-	2	-	-	-	-	-	-	
SOYBEAN			-	-	-	1	-	-	-	1	-	-	
ALFALFA DEHY.			-	-	-	1	-	-	-	-	-	-	
RICE MILL			1	-	-	-	1	-	-	-	1	2	
STARCH PLANT			-	-	-	-	-	1	-	-	-	-	
STAREA PLANT			-	1	-	-	-	-	-	-	-	-	
PET FOOD			1	-	-	-	-	-	-	-	-	-	
OTHER			-	-	-	-	-	-	-	1	-	2	

¹N.F.P.A (no report for 1957)

²U.S.D.A. Task Report

Source: Robert W. Schoeff, Dept. of Grain Science & Industry
Kansas State University, February 25, 1987 in cooperation
with Ralph Regan, FGIS, USDA.

**DUST EXPLOSIONS BY
COMMODITY HANDLED AT TIME OF EXPLOSION
1980 TO DATE**

<u>COMMODITY</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>
CORN			7	8	12	14	7
SORGHUM			1	1	2	2	5
SOYBEANS			2	1	2	-	1
WHEAT			1	-	4	-	2
BARLEY			-	-	-	1	1
BARLEY CHAFF- MALT SPROUTS			1	-	-	-	-
CORN STARCH			-	-	-	1	-
CORN GLUTEN MEAL			-	-	1	2	-
GRAIN SCREENINGS			-	1	-	-	-
RICE (BRAN)			-	-	-	1	2
WHEAT STARCH			1	-	-	-	-
NONE			-	1	1	1	2
TOTAL EXPLOSIONS	44	21	14	13	20	22	21

Robert W. Schoeff
July 1987

**U. S.
GRAIN DUST EXPLOSIONS
LEADING STATES - 1958 TO DATE**

	<u>1958-79</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>TOTAL</u>
NEBRASKA	35	3	5	2	1	6	4	2	58
ILLINOIS	29	6	1	1	2	2	4	1	46
IOWA	34	4	1	2	0	0	2	2	45
TEXAS	24	3	2	1	3	1	1	2	37
MINNESOTA	19	7	0	0	2	1	2	1	32
MISSOURI	18	3	0	2	0	0	0	1	24
KANSAS	17	4	0	0	0	0	1	5	27
OHIO	13	2	0	0	0	0	2	0	17
OKLAHOMA	12	2	1	0	0	0	0	0	15
NEW YORK	9	0	0	0	0	0	0	0	9
WISCONSIN	8	1	0	0	0	0	0	0	9

Source: Robert W. Schoeff
Kansas State University
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